

SOSUNOV, V.A.; SHIBAYEV, A.A.; KOSTINA, V., red.

[Superhigh frequency directional couplers] Napravlennye  
otvetviteli sverkhvysokikh chastot. Saratov, Privolzhskoe  
knizhnoe izd-vo, 1964. 133 p. (MIRA 18:11)

L 47355-65 EEC-4/EEC(b)-2/EWA(h)/EWT(1) Pi-4/Pj-4/Pm-4/Pac-4/Peb

ACCESSION NR: AR5009720

UR/0058/65/000/001/H039/H039

SOURCE: Ref. zh. Fizika, Abs. 2Zh265

AUTHOR: Sosunov, V. A.; Shibayev, A.A.

TITLE: Directional couplers for microwave frequencies

CITED SOURCE: Napravlenyye otvetviteli sverkhvysokikh chastot. Saratov, Privolzhsk. kn. izd-vo, 1964, 134 str.

TOPIC TAGS: directional coupler, <sup>25</sup>waveguide coupler, microwave coupler

TRANSLATION: The book is designed for senior students specializing in radio engineering and for engineering-technical personnel. It considers problems involved in the theory, design, and construction of microwave directional couplers. Principal attention is paid to waveguide directional couplers with optimal frequency characteristics. Bibliography, 48 titles.

SUB CODE: EC

ENCL: 00

Card 1/1 CC

SHIBAYEV, A.F.

~~Device for sealing the sockets of cast iron sewer pipes in a horizontal~~  
position. Rats. i izobr. predl. v stroi. no. 94:36 '54. (MLRA 8:8)

1. Glavnoye upravleniye vysotnogo stroitel'stva Ministerstva stroitel'stva.  
(Sewer pipe)

SHIBAYEV, A.I., inzh.

Intermediate telegraph repeater. Avtom., telem. i svyaz' 7  
no. 10:31 0 '63. (MIRA 16:11)

1. Laboratoriya svyazi Moskovskoy dorogi.

PHASE I BOOK EXPLOITATION 890

Shibayev, Aleksey Lukich

Gazomotornyye kompressory (Gas-powered Compressors) Moscow, Mashgiz, 1958. 187 p. 6,000 copies printed.

Reviewer: Morgulis, Yu.B., Candidate of Technical Sciences; Ed.: Meleyev, A.S., Engineer; Tech. Ed.: Salazkov, N.P.; Managing Ed. for general technical literature and literature on transport, highway and power machine building (Mashgiz): Ponomareva, K.A., Engineer.

PURPOSE: This book is intended as a practical handbook for the operation, servicing and inspection of gas-powered engine-compressors and as a training manual for assembly and operating personnel.

COVERAGE: The author states that gas-powered engine-compressors of the 8GK type are widely used in Soviet oil fields to raise pressure in the bed, in refineries to collect gaseous byproducts, and in the transportation of gas through small mains. They are also used industrially to compress air and at present they are used extensive-

Card ~~1/5~~

# Gas-powered Compressors 890

ly at gasoline and carbon black plants. Gas-powered engine-compressors of the 8GK type are driven by a 300 hp. 350 rpm. gas-powered engine. Seven models of the gas-powered engine-compressor assembly are described: 8GK3/1-50, 8GK2/1-14, 8GK2/3-15, 8GK2/2-17, 8GK2/1-26, 8GK1/16-30, 8GK1/1-4. The weight of these compressors varies between 20.200kg and 25.280kg. No personalities are mentioned. There are no references.

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1. Areas of application of gas-powered engine-compressors	5
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Card ~~2/5~~

STREMLINA, S.M.; SHIBAYEV, A.N., red.

[Hygiene of nutrition; materials to assist instructors in courses on the minimal sanitary knowledge for public food service workers] Gigiena pitaniia; materialy v pomoshch' prepodavateliam kursov po sanitarnomu minimumu dlia rabotnikov obshchestvennogo pitaniia. Moskva, In-t sanitarnogo prosveshcheniia, 1963. 55 p. (MIRA 17:9)

RUEAN, To...: SECRET, etc.

Design - Blooming... for... ..

Dist. TS/... ..

(REF 14:10)

... ..

(Follow... ..)

51105015 v. 1000  
ROGOZHIN, A.P.; DEMCHENKO, V.G.; SHIBAYEV, R.N.; KORNIYENKO, Yu.A.; SEUSTOV,  
V.A.; BRODOVSKIY, S.S.; KALASHNIKOV, I.V.

Increasing the control of brake relays to 540 a on type G cars of  
the subway. Prom. energ. 12 no.7:22 J1 '57. (MLRA 10:8)  
(Electric railroads--Brakes)

~~SHIBAYEV, D.P.~~

NOVIKOV, A.V.; GANINA, A.Z.; ONEGINA, A.K.; STULOVA, M.V.; AZAROVA, L.A.;  
DAN'KOVA, M.N.; OPOLCHENTSEVA, T.D.; ~~SHIBAYEV, D.P.~~; ZHABYKO, Ye.G.;  
MINKINA, A.G.; OVSIANKINA, Ye.I.; SAVENKOV, F.S., red.; SLEMZIN,  
A.A., red.; FOMICHEV, P.M., tekhn.red.

[Economy of Kaluga Province; collected statistics] Narodnoe khoziai-  
stvo Kaluzhskoi oblasti; statisticheski sbornik. Moskva, Gos.stat.  
izd-vo, 1957. 142 p. (MIRA 11:6)

1. Kaluzhskaya oblast', Statisticheskoye upravlenie. 2. Statisti-  
cheskoye upravleniye Kaluzhskoy oblasti (for all except Savenkov,  
Slemzin, Fomichev) 2. Nachal'nik Statisticheskogo upravleniya  
Kaluzhskoy oblasti (for Savenkov)  
(Kaluga Province--Economic conditions--Statistics)

SHIBAYEV D.Yu.

AUTHOR: Shibayev, D.Yu. 25-58-3-19/41

TITLE: Failure of the Theory of a "Vital Force" (Krakh teorii "zhiznennoy sily")

PERIODICAL: Nauka i Zhizn', 1958, Nr 3, pp 43-47 (USSR)

ABSTRACT: In this article, the author describes the discoveries made in the 19th century by the German scientist Friedrich Woehler (Veler), the French chemist Bertlo, and the Soviet scientist A.I. Bazarov, who, by their experiments, proved that the synthesis of various chemical compounds is possible without the presence of any "vital force" as assumed by supporters of vitalism. Furthermore, he deals with the application of such synthetic compounds, e.g. carbamide as used as a fertilizer, and for preparing synthetic resin and plastic materials.

AVAILABLE: Library of Congress

Card 1/1 1. Synthetic compounds-Applications

SHIBAYEV, F. I.

Agricultural Machinery - Trade and Manufacture

Struggle of the Krasnoyarsk combine builders in fulfilling their obligations for 1951  
Sel'khoz mashina No. 4, April 1952

Monthly List of Russian Accessions, Library of Congress, August, 1952. Unclassified.

SOV/68-58-8-18/28

AUTHORS: Bogach, N.S., Akulova, A.M., Seppar, A.M., Shibayev, F.P.  
and Khodykin, I.Ya.

TITLE: Automation of the Coke Wharf Gating System (Avtomatizatsiya  
raboty zatvorov koksovoy rampy)

PERIODICAL: Koks i Khimiya, 1958, nr 8, pp 52 - 56 (USSR)

ABSTRACT: The systems of automatic operation of the coke wharf  
gating system adopted at the Gubakhinskiy koksokhimicheskiy  
zavod (Gubakha Coking Works), Magnitogorskiy metallurgi-  
cheskiy kombinat (Magnitogorsk Metallurgical Combine)  
and Bagleyskiy koksokhimicheskiy zavod (Bagley Coking  
Works) are outlined and illustrated.  
There are 5 figures.

1. Coke--Handling

Card 1/1

SEPPAR, A.M.; SHIBAYEV, F.P.; KHODYKIN, I.Ya.

Magnitogorsk Metallurgical Plant. Koks i khim. no.8:55-56 '58.  
(Coke industry--Equipment and supplies) (MIRA 11:9)

SOV/68-59--3-6/23

AUTHORS: Kapel'zon, I.G., Levin, E.D., Seppar, A.M. and  
Shibayev, F.P.

TITLE: An Improvement in the Quenching of Coke (Usovershenst-  
vovaniye tusheniya koksa)

PERIODICAL: Koks i Khimiya, 1959, Nr 3, pp 27-34 (USSR)

ABSTRACT: An investigation of the coke quenching process has been studied on the Magnitogorsk Works, the results of which are reported in the paper. The distribution of moisture in the individual size fractions of coke - fig 1 and table 1. The distribution of coke in the quenching car - fig 2 and 3; the distribution of time between the individual operations of the coke quenching car - table 2; the dependence of the coke quenching time on the spraying capacity of the quencher ( $M^2$  of water/min) - table 3; the distribution of moisture in coke on the coke wharf - fig 5 and table 4; the design of the spraying installation used on the Magnitogorsk Works - fig 6. It is concluded that the necessary conditions of the stability of the moisture content of coke is the stability of the quality of the coal blend, heating conditions and coking time, as the above conditions

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SOV/68-59-3-6/23

An Improvement in the Quenching of Coke

determine the size distribution of coke and the amount of sponge it contains. There is a large variability in the distribution of coke on the cross sectional area of the coke quenching car of the same design on various batteries. The duration of the quenching period with technical water is 20-25% lower than that with effluent water. The spraying equipment used on the works is described. There are 6 figures and 4 tables.

ASSOCIATION: Magnitogorskiy Metallurgicheskiy Kombinat  
(Magnitogorsk Metallurgical Combine)

Card 2/2

KICHENKO, V. I.  
SHIBAYEV, G. A.

Botany, Medical

Comparative anatomic-morphological study of the leaves of Solomon's seal and lily of the valley; materials for the 9th pharmacopoeia. Apt. de lo no. 3, 1952.

Monthly List of Russian Accessions, Library of Congress, November 1952.  
UNCLASSIFIED.

SHIBAYEV, G.I.; GEYMAN, M.A., kandidat tekhnicheskikh nauk, retsenzent;  
SULTANOV, D.K., inzhener, retsenzent; KOVALEVA, A.A., vedushchiy  
redaktor; TROFIMOV, A.V., tekhnicheskii redaktor

[Safety engineering in the petroleum industry] Tekhnika bezopasnosti  
v neftepromyslovom dele. Moskva, Gos. nauchno-tekhn. izd-vo neftianoi  
i gorno-toplivnoi lit-ry, 1954. 222 p. (MIRA 8:3)  
(Petroleum industry--Safety measures)

SHIBAYEV, G.I.

Safety engineering and its principles in the petroleum production.  
Izv.vys.ucheb.zav.; neft' i gaz 2 no.12:127-129 '59.  
(MIRA 13:5)

1. Azerbaydzhanskiy institut nefti i khimii imeni M. Azizbekova.  
(Petroleum industry--Safety measures)

SHIBAYEV, G. P.

Resection of the urinary bladder and its plastic repair with the large intestine in an experiment. Vop. onk. 8 no.5:32-38 '62.  
(MIRA 15:7)

1. Iz urologicheskogo otdeleniya (zav. - prof. I. N. Shapiro) Instituta onkologii AMN SSSR (dir. - deystv. chl. AMN SSSR, prof. A. I. Serebrov) i kafedry operativnoy khirurgii i topografi-cheskoy anatomii (zav. - prof. A. P. Nadeyin) Gosudarstvennogo ordena Lenina instituta usovershenstvovaniya vrachey im. S. M. Kirova (dir. - dots. A. Ye. Kiselev) Adres avtora: Leningrad, P-129, 2-ya Berezovaya al., 3, Institut onkologii AMN SSSR.

(BLADDER SURGERY) (INTESTINES TRANSPLANTATION)

SHIBAYEV, G. P.

Morphological changes in the urinary bladder and intestinal  
transplant in sigmoidostomy. Zdrav. Kazakh. no.4:48-50 '62.  
(MIRA 15:6)

1. Iz urologicheskogo otdeleniya (zav. - professor I. N. Shapiro)  
Instituta onkologii Akademii meditsinskikh nauk SSSR i kafedry  
operativnoy khirurgii i topograficheskoy anatomii (zav. -  
professor A. P. Nadeyin) Leningradskogo Gosudarstvennogo insti-  
tuta dlya usovershenstvovaniya vrachey imeni S. M. Kirova.

(BLADDER--SURGERY) (COLON--TRANSPLANTATION)

BALYCHEV, O.N.; ZHILKO, E.I.; MAKEYEV, I.F.; SHIBAYEV, I.P.

Command and executive device for automatic control of a charge distributor depending on the gas temperature along the charge hole circumference of a blast furnace. Sbor. trud TSNIIICHM  
no.30:23-27 '63. (MIRA 16:10)

(Blast furnaces—Equipment and supplies)  
(Automatic control)

SOV/79-28-8-12/66

AUTHORS: Yakubchik, A. I. Spasskova, A. I., Shibayev, L. A.

TITLE: Investigation of the Chemical Structure of Sodium Carbonate Divinyl Polymers (Izucheniye khimicheskogo stroyeniya natriy-uglekislotochnogo polimera divinila)

PERIODICAL: Zhurnal obshchey khimii, 1958, Vol. 28, Nr 3, pp.2056-2061(USSR)

ABSTRACT: The sodium carbonate divinyl polymer forms by polymerizing divinyl in the presence of metallic sodium in an envelope of dry carbon dioxide. (Refs 1, 2). ~~Steinig~~ (Shtemmig) used the isoprene polymers levulin aldehyde and levulinic acid, the decomposition products of the ozonides of sodium carbonate, to show that the isoprene is bonded to the sodium carbonate polymer in the 1 and 4 positions. In investigating the chemical structure of the sodium carbonate divinyl polymer, which was maintained at temperatures of 20° and 50°, the authors found that in this polymer a greater per cent composition of the divinyl molecules was bonded in the 1 and 4 positions and that its structure resembles that of the spongy divinyl polymer (Ref 3). Table 1 shows the chemical structures of the sodium carbonate and the spongy polymers.

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SOV/79-28-8-12/66

Investigation of the Chemical Structure of Sodium Carbonate Divinyl Polymers

Although their structures are similar to those of the rubbery polymers, their properties differ greatly from those of the sodium divinyl rubbers. These latter are inelastic and relatively insoluble as a result of their chemical structures and other factors characteristic of compounds of high molecular weight. The structure of the sodium carbonate divinyl polymer was investigated by ozonolysis. The products of this ozonolysis were found to be levulinic acid, formic acid, and succinic acid, as was also the case in the ozonolysis of the rubbery divinyl polymer and the divinyl rubber (Refs 3, 4). In figures 1, 2 and 3 the chromatograms of the acids are given, showing how the polymers in question separated from the other products of the ozonolysis. According to these chromatograms the per cent of carbonic acid skeleton of the polymer in the acid and in the ozonolysis sections was calculated. The results are given in tables 2 and 3. There are 3 figures, 5 tables, and 10 references, 7 of which are Soviet.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet  
(Leningrad State University)

Card 2/3

SOV/79-28-8-12/66

Investigation of the Chemical Structure of Sodium Carbonate Divinyl Polymers

SUBMITTED: June 28, 1957

Card 3/3

KOROTKOV, A.A.; SHIBAYEV, L.A.; PYRKOV, L.M.; ALDOSHIN, V.G.; FRENEEL',  
S.Ya.

Synthesis and study of hybrid polymers. Styrene and isoprene  
block-polymers obtained by catalytic polymerization in a solution  
under the action of butyllithium. Vysokom. soed. 1 no.3:443-454  
Mr '59. (MIRA 12:10)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR.  
(Styrene) (Isoprene)

ALEKSANDROV, Georgiy Mikhaylovich; SHIBAYEV, N.A., redaktor; GLUKHOYEDOVA,  
G.A., tekhnicheskij redaktor

[They are brought back to life] Oni vozvrashchajutsia k zhizni.  
Moskva, Gos.izd-vo meditsinskoi lit-ry, 1955. 26 p. (MIRA 9:1)  
(Death, Apparent)

SHIBAYEV, N.A. (Moskva)

Council of public health feldshers; experience in one district.

Fel'd.i akush. no.3:38-44 Mr '55.

(MLRA 8:5)

(NATIONAL HEALTH PROGRAMS,  
Russia, work of feldshers)

SHIBAYEV, Nikolay Aleksandrovich; KURYGIN, V.M., redaktor; ROMANOVA, Z.A.,  
tekhnicheskiiy redaktor

[A great force; work practice of sanitation employees] Bol'shaia  
sila; opyt raboty sanitarnogo aktiva. Moskva, Gos. izd-vo med.  
lit-ry, 1956. 71 p. (MIRA 9:7)  
(SANITATION) (RED CROSS)

SHIBAYEV, N.A. (Moskva)

How rural communities help feldsher-midwife stations in their work.  
Fel'd. i akush. 21 no.10:36-38 O '56. (MLRA 9:12)  
(PUBLIC HEALTH, RURAL)

SHIBAYEV, N.A.

[Donors; a popular account] Donory; nauchno-poluliarnyi ocherk.  
Moskva, Medgiz, 1957. 41 p. (MIRA 10:11)  
(BLOOD DONORS)

SHIBAYEV, N.A. (Moskva)

Control of blood-sucking insects. Fel'd. i skush. 23 no.2:48-49  
F '58. (MIRA 11:3)  
(INSECTS, INJURIOUS AND BENEFICIAL)  
(INSECTICIDES)

SHIBAYEV, Nikolay Filippovich, polkovnik, dots., kand. voyennykh nauk; KHALIMON, F.L., inzh.-polkovnik, red.

[Fighting with rockets] Bor'ba s raketami. Moskva, Voenizdat, 1965. 128 p. (MIRA 18:6)

SHIBAYEV, N.K. [Shybaiev, N.K.]; TSURPAL, I.A.

Dump trailer for DT-14 tractors. Mekh.sil'.hosp. 11 no.2:  
10-11 F '60. (MIRA 13:6)  
(Dump trucks)

SHIBAYEV, N.K.; TSURPAL, I.A.

Dump trailer for DT-14 tractors. Trakt.1 sel'khozmasb. 30  
no.2:37 F '60. (MIRA 13:5)

1. Melitopol'skiy institut mekhanizatsii sel'skogo khozyaystva.  
(Dumping appliances)

SHIBAYEV, N.P.

Construction of buildings for the textile and light industry in the near future. Stroi.prom.32 no.2:18-23 F '54. (MLRA 7:2)

1. Glavnyy inzhener Upravleniya kapital'nogo stroitel'stva  
Ministerstva promyshlennykh tovarov shirokogo potrebleniya SSSR.  
(Industrial buildings)

SHIBAYEV, N.P., inzhener

Wall and floor construction elements used in Austria. Stroi.  
prom. 33 no.4:40-42 Ap '55. (MLRA 8:6)  
(Austria--Building) (Girders)

SHIBA<sup>Y</sup>EV, N.S.

Preimushchestva aviadizelia po sravneniiu s karbiuratornym motorom na samolete.  
(Tekhnika vozdushnogo flota, 1940, no. 12, p. 76-80, tables)

Title tr.: Advantages of aviation Diesels over carburetor-equipped aircraft engines.

TL504.T4 1940

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of Congress,  
1955.

OL'SHANOVA, K., prof.; POTAPOVA, M., kand.khim.nauk; KORNIYENKO, A., kand.  
tekhn.nauk; KUZENKO, Ye.; SHIBANOVA, P.

Ion exchange resins in the production of protein hydrolyzates.  
Mias.ind.SSSR 35 no.1:16-20 '64. (MIRA 17:4)

1. Moskovskiy technologicheskii institut myasnoy i molochnoy  
promyshlennosti (for Korniyenko). 2. Moskovskiy ordena Lenina  
myasokombinat (for Shibanova).

SHILAEV, P. M.

"Aleksandr Vladimirovich Pavlov," Byul. Mosk. Obshch. Ispytat. Prirody, Otdel. Geol.,  
23, No. 1, 1948.

~~SHIBAYEV, Petr Nikolayevich~~; STRELETSKIY, N.S., doktor tekhnicheskikh nauk, professor, redaktor; BORODINA, I.S., redaktor izdatel'stva; EL'KINA, E.M., tekhnicheskii redaktor

[Reference manual of bibliographical works and periodicals of the U.S.S.R. and foreign countries on construction work] Spravochnik po stroitel'noi bibliografii i periodike SSSR i zarubezhnykh stran. Obshchaia red. i predisl. N.S.Streletskogo. Moskva, Gos.izd-vo lit-ry po stroit. i arkhitekt., 1957. 183 p. (MIRA 10:9)

1. Chlen-korrespondent Akademii nauk SSSR (for Streletskiy)  
(Bibliography--Construction industry)

PEDOSEYEV, B.V., kandidat tekhnicheskikh nauk; SHIBAYEV, P.N., kandidat sel'-skokhozyaystvennykh nauk.

Harvesting in separate stages in districts of the non-Chernozem zone. Zemledelie 5 no.7:40-46 J1 '57. (MLRA 10:3)  
(Grain--Harvesting)

SHIBAYEV, P.N., kand.sel'skokhozyaystvennykh nauk

Measures for increasing the protein content of wheat kernels in  
the non-Chernozem zone. [Trudy] VNIIZ no.35:76-84 '58.

(MIRA 11:10)

1. Institut zemledeliya tsentral'nykh rayonov nechernozemnoy  
polosy.

(Wheat)

(Proteins)

SHIBAYEV, P.S.

Balashikha District. Gor.khoz.Mosk. 35 no.5:22-24 My '61.  
(MIRA 14:6)

1. Predsedatel' ispolkoma Balashikhinskogo raysoveta.  
(Balashikha District)

SEDLITSKIY, R.V.; SHIBAYEV, V.A.

Separation of radioactive isotopes of silver without a carrier from  
the fission products of heavy nuclei. Radiokhimiya 5 no.5:635-637  
'63. (MIRA 17:3)

SHIBAYEV, V. D., SHTRANIKH, I. V., DYUKOV, G. P., AND ZABIYAKIN, G. I.

"Multichannel Recording Systems on Magnetic Tape with Averaging of  
Statistical Data"

Joint Institute of Nuclear Research, Dubna, USSR

report submitted for the IAEA conf. on Nuclear Electronics, Belgrade, Yugoslavia  
15-20 May 1961

L 10585-66 EWT(m)/EPF(n)-2/EWP(t)/EWP(b) LJP(c) JD/JG/GG  
 ACC NR: AP5025397 SOURCE CODE: UR/0181/65/007/010/3110/3111 4/1

AUTHOR: Avdonin, V. P.; Vasil'yev, I. A.; Mikhail'chenko, G. A.; Plachenov, B. T.;  
 Shibayev, V. A. 55 55 55 55

ORG: Leningrad Technological Institute im. Lensovet (Leningradskiy tekhnologicheskii  
 institut) 55

TITLE: Generation of emf during annealing of NaCl(Ag) single crystals exposed to  
 beta radiation 19, 55

SOURCE: Fizika tverdogo tela, v. 7, no. 10, 1965, 3110-3111

TOPIC TAGS: sodium chloride, crystal phosphor, single crystal, beta radiation

ABSTRACT: When an alkali halide single crystal phosphor is bombarded by beta particles and heated at a constant rate, a potential difference which varies with thermoluminescence is generated between electrodes vaporized on the opposite faces of the crystal. The authors study this phenomenon in a sodium chloride crystal activated by 0.005% silver chloride. The methods used in growing the crystals and making the measurements are briefly described. Curves are given for the voltage developed

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L 10585-66

ACC NR: AP5025397

across the crystal with and without radiation. A potential difference in non-irradiated specimens was observed only at temperatures above 330-350°K. Different specimens showed different voltages and various relationships between voltage and temperature before irradiation. On the other hand, potential differences measured after beta radiation were approximately the same for all specimens. The experimental data indicate that the voltage generated in irradiated crystals is due to non-homogeneity in the beta radiation dose, and consequently to non-uniform concentration of current carriers through the crystal. Orig. art. has: 1 figure.

SUB CODE: 20/ SUBM DATE: 05May65/ ORIG REF: 002/ OTH REF: 001  
18

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Card 2/2

L 28329-66 EPF(n)-2/EWT(1)/EWT(m)/ETC(f)/EWG(m)/T/EWP(t)/ETI IJP(c) GG/AT/JD/JG

ACC NR: AP6013079

SOURCE CODE: UR/0048/66/039/004/0679/0680

AUTHOR: Shibayev, V.A.; Avdonin, V.P.; Vasil'yev, I.A.; Mikhail'chenko, G.A.; Plachenov, B.T.

56  
B

ORG: Leningrad Technological Institute im. Lensovet (Leningradskiy tekhnologicheskii institut)

TITLE: On the appearance of an emf incident to annealing of the beta-irradiated alkali halide crystals Report, Fourteenth Conference on Luminescence held in Riga 16-23 September 1965

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no. 4, 1966, 679-680

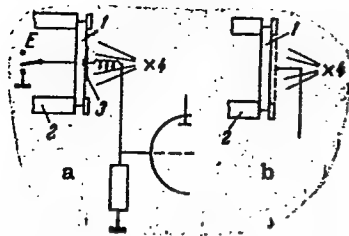
TOPIC TAGS: crystal phosphor, alkali halide, radiation effect, beta radiation, emf

ABSTRACT: In the course of study of the conductivity of alkali halide crystals it was discovered that if a crystal is irradiated with beta particles at 90 K, upon subsequent heating of the crystal, in addition to the familiar thermostimulated luminescence, there is observed a free charge on the surface of the crystal that faced the beta source. The authors tentatively term this emf the "thermostimulated concentration emf". In the experiments this charge was collected on a sputtered aluminum electrode connected to an appropriate indicator. The measuring setups are diagramed in the figure. The present experiments involved measurements with a sputtered elec-

Card 1/2

L 28329-66

ACC NR: AP6013079



Experimental setups: a) with a sputtered electrode, b) with a non-contact electrode. 1 - crystal, 2 - crystal holder, 3 - electrode, 4 - 500 mc  $\text{Sr}^{90}$  +  $\text{Y}^{90}$  beta source.

trode and with a non-contacting electrode, mounted 0.2 to 0.5 mm from the crystal surface (in the latter case the effect is weaker and opposite in sign). The purpose of the measurements was to determine the magnitude of the charge; this was done by applying a dc voltage sufficient to realize compensation. The measurement results are presented in the form of curves. Two mechanisms of the effect are hypothesized: one is essentially the electret mechanism; the other is based on nonuniform distribution over the thickness of carriers held in traps. An argument in favor of the latter mechanism is the near identity of the temperature of the glow-curve and charge peaks. Orig. art has: 3 figures.

SUB CODE: 20/

SUBM DATE: 00/

ORIG REF: 001/

OTH REF: 000

Card 2/2 CC

ACC NR: AR6033987

SOURCE CODE: UR/0271/66/000/008/B035/B035

AUTHOR: Zhukov, G. P. ; Barilko, Sh. I. ; Zabiyaikin, G. I. ; Kim Gen' Chu' ;  
Li Min Ven' ; Tishin, V. G. ; Shibayev, V. D.

TITLE: Magnetic tape analyzer

166

SOURCE: Ref. zh. Avtomatika, telemekhanika i vychislitel'naya tekhnika, Abs. 9B265

REF SOURCE: Tr. 6-y Nauchno-tekhn. konferentsii po yadern. radioelectron.  
T. 3, Ch. 1. M., Atomizdat, 1965, 197-207

TOPIC TAGS: magnetic analyzer, magnetic recording tape, computer memory, storage device

ABSTRACT: The block-diagram of a multidimensional magnetic analyzer with magnetic tape recording is investigated. Binary codes which characterize the investigated event are simultaneously recorded in the recorder on 20 tracks of an evenly moving magnetic tape. The recorder contains an intermediate memory computer, a recording and readout device, a controlling storage device with an oscillographic indicator and a device for selecting information during readout.

Card 1/2

UDC: 681.142:621.374.32

ACC NR: AR6033987

Information is delivered to the input of the intermediate memory in the form of a parallel binary code. The controlling storage device is designed to control the regularity of the analyzer's operation. It possesses a recording cycle of 12  $\mu$ sec over 512 recording channels. In order to realize a time-amplitude analysis with a large number of channels, the recorder has its own amplitude and time coding units. Three illustrations. Bibliography of 3 titles. [Translation of abstract]

SUB CODE: 09/

Card 2/2

ACCESSION NR: AR4032156

S/0058/64/000/002/A017/A017

SOURCE: Ref. zh. Fiz., Abs. 2A180

AUTHORS: Dorofeyev, V. A.; Zabiyaikin, G. I.; Zamriy, V. N.; Markonenko, V. I.; Semashko, V. I.; Tulayev, B. P.; Cherny\*y, A. V.; Shibayev, V. D.

TITLE: Automatization of the reduction of measurement results

CITED SOURCE: Tr. 5-y Nauchno-tekhn. konferentsii po yadern. radioclektron. T. 4. M., Gosatomizdat, 1963, 7-14

TOPIC TAGS: measurement results, data reduction, computer data reduction, computer data insertion, computer memory, direct coupling data insertion, rigid coupling free coupling

TRANSLATION: Problems are discussed involved in the automatization of the reduction of the experimental data obtained in multichannel

1/3

ACCESSION NR: AR4032156

analyzers, multicomputer systems (hodoscopes), and bubble chambers. It is concluded that it is most sensible to employ for this purpose the existing universal digital computers, capable of solving all mathematical problems. The most rational method of inserting the information is by direct coupling. An analysis based on estimates of the insertion of information into different units of a universal computer is shown that a system in which a large number of experimental data are inserted into the magnetic memory of the computer is among the most advantageous. Two possible coupling variants are considered: "rigid" coupling, when the information is inserted into the memory with the aid of the electronic units of the computer, and "free" coupling, when the information insertion does not depend on the state of the computer, but additional electronic apparatus is used for this purpose. The most promising and advantageous is the "free" coupling. The information is recorded on magnetic tape in this case in the form selected for the given type of computer. This makes it possible to accumulate the experimental data over a

Cord 2/3

ACCESSION NR: AR4032156

long time without tying up the computer at the same time, and to process the experimental data without any insertion operations, by direct access to the magnetic memory. Specific features of automated insertion of experimental data into a computer are discussed. L. I.

DATE ACQ: 31Mar64

SUB CODE: CP, SD

ENCL: 00

Card 3/3

ACCESSION NR: AR4020783

S/0271/64/000/002/B044/B044

SOURCE: RZh. Avtomat., telemekh. i vy\*chislitel. tekhnika, Abs. 2B279

AUTHOR: Zhuravlev, B. Ye.; Shibayev, V. D.

TITLE: Binary-to-decimal converter

CITED SOURCE: Tr. 5-y Nauchno-tekhn. konferentsii po yadern. radio-elektron.  
T. 4. M., Gosatomizdat, 1963, 73-77

TOPIC TAGS: binary-to-decimal converter, decade pulse counter, single-cycle  
shift register, magnetic core

TRANSLATION: The proposed binary-to-decimal converter operates as follows: the bits are searched beginning with the left-hand digit. When passing to the next digit the preceding one is doubled and added to the product of the following digit. The converter consists of several decade pulse counters. The number of decades is determined by the expression  $10^N > 2^n > 10^{N-1}$ , where N is the number of decades, n is the maximum number of bits. The decades are so constructed that the number stored in them can be raised by one as well as doubled. Each decade is a single-

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ACCESSION NR: AR4020783

cycle shift register made of magnetic cores having rectangular hysteresis loops. The cores used in the converter are type K-272 (outside dia. 4 mm), the transistors are type P16A, and the diodes are type D9B. During test the decades operated normally with a pulse cycling frequency of 100 kc. The converter is most applicable for data output from multichannel amplitude and time pulse analyzers with high-speed printers. Orig. art. has 2 figs. G. K.

DATE ACQ: 03Mar64

SUB CODE: SP, CP

ENCL: 00

Card

2/2

ACCESSION NR: AR4022435

S/0058/64/000/001/A028/A029

SOURCE: RZh. Fizika, Abs. 1A269

AUTHORS: Zhukov, G. P.; Zabiyaikin, G. I.; Radionov, K. G.; Shibayev, V. D.; Shtranikh, I. V.

TITLE: Multidimensional registration system

CITED SOURCE: Tr. 5-y Nauchno-tekhn. konferentsii po yadern. radioelektronike. T. 2. Ch. 2. M., Gosatomizdat, 1963, 115-122

TOPIC TAGS: multidimensional registration system, intermediate memory storage, ferrite core memory, magnetic tape memory, pulse height spectrum, visual estimate of spectrum, data readout to computer

TRANSLATION: A multidimensional registration system is considered, in which the pulses that carry the information are memorized in the

Card  
1/2

ACCESSION NR: AR4022435

intermediate memory as they are received. After the end of the experiment, the information is processed and sorted out by channels. The sorting unit is a 1024-channel analyzer with ferrite-core memory. The intermediate memory employs a 35-mm magnetic tape, on which 25 tracks are recorded simultaneously. With 25-track recording, the total number of memory channels can reach  $32 \times 10^6$ . The intermediate memory block includes an equalizing unit with five memory elements, which reduces the effective value of the instrument dead time to 80--100 microseconds. The program for reducing the experimental data makes it possible to monitor the preliminary results of the measurements by extraction of eight 128-channel pulse-height spectra. After a visual estimate of the spectra, the information is fed by cable directly to a "Kiev" computer. Yu. Semenov.

DATE ACQ: 03Mar64

SUB CODE: CP, SD

ENCL: 00

Card/2

ZHUKOV, G.P.; LABIVAKIN, G.I.; SHIBAYEV, V.D.

Many-track magnetic tape recording for pulse-height analysis.  
Prib. i tekhn. eksp. 8 no.6:66-72 Nov '65. (MIRA 17:6)

1. Ob'yedinennyy institut yadernykh issledovaniy.

CHERNOMIR, A.P., akademik; KUTSOV, Yu.G.; SHIBAYEV, V.L.

Mechanical properties and structure of the weld zone in rolled sections of butt-welded blanks. Met. i gornorud. prom. no.4: 44-45 JI-Ag '64. (MIRA 18:7)

1. AN UkrSSR (for Chekmarev).

SHIBAYEV, V.M.; ABRAMOV, V.S.; elektromekhanik

Automatical radio control center for radio communication between  
trains. Avtom. telem. i svyaz' 4 no.9:37-39 S '60.

(MIRA 139)

1. Starshiy inzhener Omskoy distantzii signalizatsii i svyazi  
Omskoy dorogi (for Shibayev).

(Railroads--Communications systems)

KOCHETKOV, N.K.; NIFANT'YEV, E.Ye.; SHIBAYEV, V.N.

Synthesis of acetyl-2-chloro-cycloalkenes. Dokl. AN SSSR 117 no.2:  
241-244 N '57. (MIRA 11:3)

1. Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova.  
Predstavleno akademikom A.N. Nesmeyanovym.  
(Cycloalkenes)

5.3400

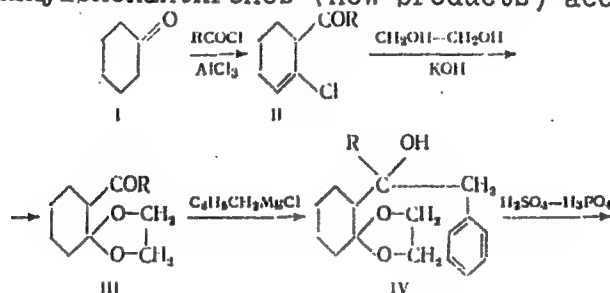
17297  
SOV/63-4-6-31/37

AUTHORS: Kochetkov, N. K., Nifan't'yev, E. Ye., Shibayev, V. N.

TITLE: Brief Communications. New Synthesis of Phenanthrene

PERIODICAL: Khimicheskaya nauka i promyshlennost', 1959, Vol 4, Nr 6, p 808 (USSR)

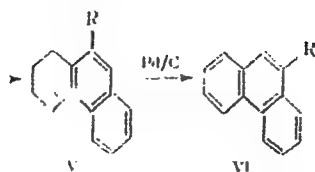
ABSTRACT: A new method of synthesis of the phenanthrene ring system was developed. The above method allows obtaining 10-alkyl-1,2,3,4-tetrahydrophenanthrene, and 9-alkylphenanthrenes (new products) according to:



Card 1/4

Brief Communications. New Synthesis  
of Phenanthrene

77297  
SOV/63-4-6-31/37



Cyclohexanone was condensed with acid chlorides in the presence of  $\text{AlCl}_3$  forming acyl-2-chlorocyclohex-2-enes (II),  $\text{R} = \text{CH}_3$ , bp  $108-109^\circ/15 \text{ mm}$

$n_D^{20} 1.4985$ ,  $d_4^{20} 1.1232$ , in 82% yield;  $\text{R} = \text{C}_2\text{H}_5$ , bp  $102-103^\circ/9 \text{ mm}$ .  $n_D^{20} 1.4929$ ,  $d_4^{20} 1.0903$ , in 59% yield.  $\text{R} = \text{iso-C}_4\text{H}_9$ , bp  $70-71^\circ/0.4$ ,  $n_D^{20} 1.4859$ ,  $d_4^{20} 1.0420$ , in 45% yield. The above compounds II were converted with ethylene glycol and with alkali into monoethyleneketals of 2-acylcyclohexanones (III).

Card 2/4

Brief Communications. New Synthesis  
of Phenanthrene

77291  
SOV/63-4-6-31/37

R	bp in °C (pr. in mm)	$n_D^{20}$	$d_4^{20}$	Yield in %
CH <sub>3</sub>	121-122/10	1.4781	1.1197	66.0
C <sub>2</sub> H <sub>5</sub>	123-124/8	1.4745	1.0808	50.0
iso-C <sub>4</sub> H <sub>9</sub>	96-97/0.4	1.4727	1.0413	64.0

Compounds III with benzyl magnesium chloride form  
hydroxyacetals (IV):

CH <sub>3</sub>	67-68	—	—	71.0
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Aromatic cyclodehydration of IV forms 9-alkyl-1,2,3,4-  
tetrahydrophenanthrenes (V):

CH <sub>3</sub>	42.5-43	—	—	32.0
C <sub>2</sub> H <sub>5</sub>	—	—	—	20.0
iso-C <sub>4</sub> H <sub>9</sub>	75	—	—	53.0

Card 3/4

Brief Communications. New Synthesis  
of Phenanthrene

77297  
SOV/63-4-6-31/37

Dehydration of compounds V over Pd form 9-alkylphenan-  
threnes (VI): R = CH<sub>3</sub>, picrate, mp 148-149°; R = C<sub>2</sub>H<sub>5</sub>,  
picrate, mp 120-121°.

ASSOCIATION: Lomonosov Moscow State University (Moskovskiy  
gosudarstvennyy universitet imeni M. V. Lomonosova)

SUBMITTED: June 9, 1959

Card 4/4

5 (3)

AUTHORS: Kochetkov, N. K., Nifant'yev, E. Ye., SOV/79-29-7-48/83  
Shibayev, V. N.

TITLE: Synthesis of the 1-Acyl-2-chlorocyclopentene-1 and Ethylene  
Ketals of 2-Acylcyclopentanones (Sintez 1-atsil-2-khlortsiklo-  
pentenov-1 i etilenketaley 2-atsiltsiklopentanonov)

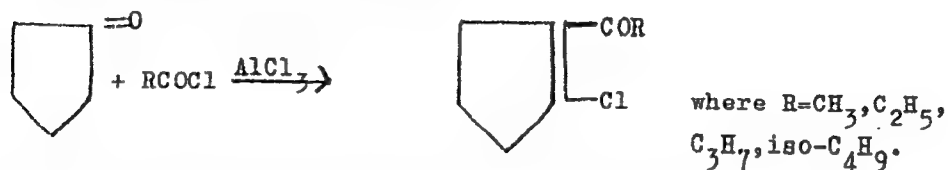
PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 29, Nr 7, pp 2324 - 2329  
(USSR)

ABSTRACT: Up to the present date only open chain derivatives of the im-  
portant  $\beta$ -chlorovinylketones have been investigated in detail  
(Refs 1,2,3,4,5). Alicyclic representatives of this class have  
practically been unknown up to the present. Two contradictory  
reports have been given concerning the synthesis of 1-acyl-2-  
chlorocyclohexenes by the condensation of cyclohexanone with  
acetyl chloride in the presence of  $AlCl_3$  (Refs 6,7). In exten-  
sion of a previous thorough investigation (Ref 8) of this re-  
action, which up to date presents the only possible way of syn-  
thesizing the hitherto unknown compounds of the afore-mentioned  
type, the authors carried out further extensive studies. The  
reaction of cyclopentanone with acid halides in the presence of

Card 1/3

Synthesis of the 1-Acyl-2-chlorocyclopentene-1 and SOV/79-29-7-48/83  
Ethylene Ketals of 2-Acylcyclopentanones

$\text{AlCl}_3$  was of a general nature and yielded the hitherto unknown 1-acyl-2-chlorocyclopentenes-1:



The reaction proceeded most favorably when cyclopentanone was added to a previously prepared mixture of the acid chloride and  $\text{AlCl}_3$  in dichloro ethane. The reaction mechanism is given in scheme 2. The 1-acyl-2-chlorocyclopentenes obtained were rather instable oily liquids. Besides spectroscopic data the ozonization of 1-acetyl-2-chlorocyclopentene-1 was decisive for the verification of the structure (Scheme 3). Thus, the experimental results showed that in the cyclopentanone series the above reaction yields  $\alpha, \beta$ -unsaturated ketones, cyclic analogs of  $\beta$ -chlorovinylketone, whereas in the cyclohexanone series the

Card 2/3

Synthesis of the 1-Acyl-2-chlorocyclopentene-1 and SOV/79-29-7-48/83  
Ethylene Ketals of 2-Acylcyclopentanones

same reaction gives  $\beta,\gamma$ -unsaturated ketones as main products. It was shown that the halogen in 1-acyl-2-chlorocyclopenten-1 is less mobile than in  $\beta$ -chlorovinyl ketones. By the reaction of the above pentenes-1 with ethylene glycol in the presence of KOH the hitherto unknown ethylene ketals of 2-acylcyclopentanones were prepared. There are 19 references, 16 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet (Moscow State University)

SUBMITTED: June 5, 1958

Card 3/3

S/079/60/030/007/034/039/XX  
B001/B066

AUTHORS: Kochetkov, N. K., Nifant'yev, E. Ye., and Shibayev, V. N.

TITLE: Synthesis of Acyl-2-chloro-cyclohexenes-2 and Ethylene  
Ketals of 2-Acyl-cyclohexanones. A New Synthesis of Phen-  
anthrenes 1

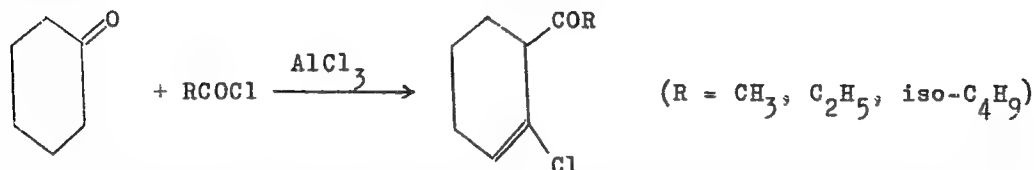
PERIODICAL: Zhurnal obshchey khimii, 1960, Vol. 30, No. 7, pp. 2275-2282

TEXT: The authors describe the synthesis of the ethylene ketals of 2-acyl-cyclohexanones which have not been described as yet and were used as the starting material in a more convenient method of synthesizing phenanthrene derivatives. The synthesis was made on the basis of acyl-2-chlorocyclohexenes-2 which had been obtained by the authors in Ref. 1 by condensation of cyclohexanone with acid chlorides in the presence of  $AlCl_3$ , most suitably in a molar ratio of 2-3  $AlCl_3$  : 2-3 acid chloride : 1 ketone: ✓

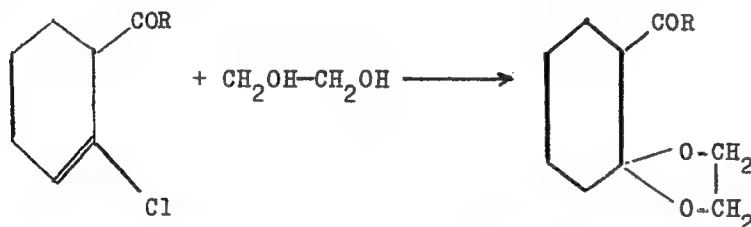
Card 1/4

Synthesis of Acyl-2-chloro-cyclohexenes-2 and Ethylene Ketals of 2-Acyl-cyclohexanones. A New Synthesis of Phenanthrenes

S/079/60/030/007/034/039/XX  
B001/B066



The reaction must be carried out at low temperature since otherwise resinification occurs (yield, 45-80%). On reaction of acyl-2-chlorocyclohexene-2 with ethylene glycol which has been earlier used by the authors (Refs. 2, 10, 11), the ethylene ketals of 2-acyl-cyclohexanones were obtained (50-60%)



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Synthesis of Acyl-2-chloro-cyclohexenes-2 S/079/60/030/007/034/039/XX  
and Ethylene Ketals of 2-Acyl-cyclo- B001/B066  
hexanones. A New Synthesis of Phenanthrenes

The best solvent is dioxane. Ethylene ketals of 2-acyl-cyclohexanones in which one of the carbonyl groups is protected, are a convenient starting material. In this case, they were used as initial compounds for a new synthesis of the phenanthrene system. This synthesis is closely related to the synthesis of the naphthalene ring described by the authors in Refs. 10, 12, and is performed according to scheme 3. On reaction of the ethylene ketals with benzyl magnesium chloride, the corresponding oxy-ketals are formed which are directly converted to 1,2,3,4-tetrahydro-phenanthrenes by aromatic cyclodehydration. The best condensing agents were hydrogen bromide in acetic acid, or mixtures of concentrated sulfuric and phosphoric acid. Tetrahydrophenanthrenes are separable by distillation. They are purified by producing the picrates. By this method, some 10-alkyl-1,2,3,4-tetrahydrophenanthrenes hitherto unknown were obtained in yields of between 25 and 55%. The structure of the resultant compounds was confirmed by the absorption spectra in ultraviolet, which are characteristic of the tetrahydrophenanthrene ring. The resultant tetrahydro-phenanthrenes are quantitatively converted to 9-alkyl-phenanthrenes when heated with palladium-on-carbon (Scheme 4). There are 19 references: 10 Soviet, 5 US,

Card 3/4

Synthesis of Acyl-2-chloro-cyclohexenes-2  
and Ethylene Ketals of 2-Acyl-cyclo-  
hexanones. A New Synthesis of Phenanthrenes

S/079/60/030/007/034/039/XX  
B001/B066 ✓

1 British, 2 German, and 2 French.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet  
(Moscow State University)

SUBMITTED: July 6, 1959

Card 4/4

BUDOVSKIY, E.I.; SHIBAYEV, V.N.; YELISEYEVA, G.I.; KOCHETKOV, N.K.

Synthesis of cytidine phosphate glucose. Izv.AN SSSR,Otd.khim.  
nauk no.8:1491-1493 Ag '62. (MIRA 15:8)

1. Institut khimii prirodnikh soyedineniy AN SSSR.  
(Cytidine phosphate) (Glucose)

KOCHETKOV, N.K.; BUDOVSKIY, E.I.; SHIBAYEV, V.N.

Analogs of coenzymes of carbohydrate metabolism. Report No.1:  
Synthesis of 3-N-methyluridine diphosphate glucose. Izv.AN  
SSSR.Otd.khim.nauk no.6:1035-1041 '62. (MIRA 15:8)

1. Institut khimii prirodnikh soyedineniy AN SSSR.  
(Uridine phosphate) (Coenzymes)

KOCHETKOVA, N.K.; BULOFSKIY, E.I.; SHIBAYEV, V.N.

Structure and function of nucleoside diphosphate sugars.  
Biokhimiia 28 no.4:741-750 J1-Ag '63. (MIRA 18:3)

1. Institut khimii prirodnkh soyedineniy AN SSSR, Moskva.

KOSHECHENOV, A.A., BUDOVSKIY, S.I.; SHIBATSEV, V.N.

Chemical approach to the study of nucleic acids and nucleic  
coenzymes. Izv. AN SSSR. Ser. biol. no.4:512-524 J1-Ag '64.  
(MIRA 17:10)

1. Institut khimii prirodnnykh soedineniy AN SSSR.

KUCHENKOV, N.K.; BUDOVSKIY, E.I.; SHIBAYEV, V.N.

Nucleoside diphosphate sugars; their isolation, structure, and  
biochemical properties. Usp. biol. khim. 6:108-141 '64.

(MIRA 18:3)

1. Institut khimii prirodnikh soedineniy AN SSSR, Moskva.

BUDOVSKIY, E.I.; SHIBAYEV, V.N.; YELISEYEVA, G.I.; KOCHETKOV, N.K.

Analogs of coenzymes of carbohydrate metabolism. Report No.4:  
Synthesis of 6-azauridine diphosphate glucose. Izv. AN SSSR  
Ser. khim. no.7:1236-1241 J1 '64. (MIRA 17:8)

1. Institut khimii prirodnikh soyedineniy AN SSSR.

KOCHETKOV, N.K.; BUDOVSKIY, E.I.; SHIBAYEV, V.N.; YELISEYEVA, G.I.

Secondary structure of nucleoside diphosphate sugars. Hydrogenation of uridine diphosphate glucose and its synthetic analogs. Dokl. AN SSSR 159 no.3:605-608 N '64 (MIRA 18:1)

1. Institut khimii prirodnikh soedineniy AN SSSR. 2. Chlen korrespondent AN SSSR (for Kochetkov).

KOCHETKOV, N.K.; BUDOVSKIY, E.I.; SHIBAYEV, V.N.; YELISEYEVA, G.I.

Synthesis of dihydrouridine diphosphate glucose. Izv. AN SSSR. Ser.  
khim. no.5:914-915 '65. (MIRA 18:5)

. 1. Institut khimii prirodnikh soyedineniy AN SSSR.

KOCHETKOV, N.K.; BUDOVSKIY, E.I.; SHIBAYEV, V.N.

Analoga of carbohydrate metabolism coenzymes. Report No.7.  
Synthesis of isocytidine diphosphate glucose. Khim. prirod.  
soed. no.5:328-335 '65. (MIRA 18:12)

1. Institut khimii prirodnikh soyedineniy AN SSSR. Submitted  
April 14, 1965.

KOCHETKOV, N.K.; BUDOVSKIY, E.I.; SHIBAYEV, V.N.

Analoge of carbohydrate metabolism coenzymes. Report No.8.  
Synthesis of 2-thiouridine diphosphoglucose. Khim. prirod.  
soed. no.6:409-414 '65. (MIRA 19:1)

1. Institut khimii prirodnikh soedineniy AN SSSR. Submitted  
June 14, 1965.

PLATE, N.A.; SHIBAYEV, V.P.; KARGIN, V.A.

Some methods of synthesizing graft polymers. Vysokom.soad.  
1 no.12:1853-1858 D '59. (MIRA 13:5)

1. Moskovskiy gosudarstvennyy universitet. Khimicheskiy fakul'-  
tet.

(Polymers)

KARGIN, V.A.; PLATE, N.A.; SHIBAYEV, V.P.

Plasticization of polyvinyl alcohol - styrene and polyacrylic  
acid-styrene graft copolymers. Vysokom.soed. 2 no.1:166-173  
Ja '60. (MIRA 13:5)

1. Moskovskiy gosudarstvennyy universitet. Khimicheskiy  
fakul'tet.  
(Styrene) (Vinyl alcohol) (Acrylic acid)

89590

S/190/61/003/002/008/012

B101/B215

15.8600 2209

AUTHORS: Plate, N. A., Shibayev, V. P., Patrikeyeva, T. I.,  
Kargin, V.A.

TITLE: Synthesis and properties of grafted copolymers of isotactic  
and atactic polystyrene

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 3, no. 2, 1961,  
292-298

TEXT: In previous papers, the authors together with other collaborators,  
(Refs.1-4: Vysokomolek. soyed. 1, 114, 1959; 1, 1101, 1959; 1, 1547, 1959;  
2, 166, 1960) studied grafted copolymers of chemically and physically  
different components. The present paper reports on the examination of  
grafted copolymers consisting of chemically equal chains which are  
different in structure: copolymers with crystalline, isotactic poly-  
styrene main chains, and amorphous, atactic polystyrene side chains.  
They were produced by ozonization of isotactic polystyrene (PS) whose  
atactic fraction was washed out by boiling methyl-ethyl ketone. The  
fraction insoluble in this solvent, had a molecular weight of 80,000.

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89590

Synthesis and properties of grafted...

S/190/61/003/002/008/012  
B101/B215

Ozonization was conducted in a glass vessel. The experimental conditions are given in a table. After the reaction,  $N_2$  was blown through the apparatus, and evacuated at room temperature; the content of active  $O_2$  in the sample was determined by elementary analysis. Ozonization of PS films was less effective due to the difficult diffusion of ozone. In agreement with P. Lebel (Ref.10: Thesis, Paris 1957), the infrared spectrum showed no OH bands thus proving the absence of hydrogen peroxide. Peroxide of experiment no. 5 (see table) served as initiator for the polymerization of atactic styrene monomer. The latter was carried out in phials, either in argon atmosphere or in high vacuum. The optimum was found to be: 1 hr of heating up to  $60^\circ C$ , then 2 hr up to  $65^\circ C$ , 3 hr up to  $70^\circ C$ , and finally 2 hr up to  $75^\circ C$ . Faster increase in temperature led to the formation of network. In solutions (benzene, toluene), polymers of lower degrees of grafting were obtained. Atactic homopolystyrene (side product of the reaction) was removed by a 10 - 15 hr treatment with methyl-ethyl ketone. The molecular weight of the product was 200,000. Grafted copolymers with 17, 31, and 35%

Card 2/7

89590

Synthesis and properties of grafted...

S/190/61/003/002/008/012  
B101/B215

contents of atactic components were obtained. Fig. 2 shows a diagram of turbidimetric titration of atactic polystyrene, mechanic mixtures of 35% of atactic plus 65% of isotactic PS, grafted copolymer with 35% of an atactic component, and isotactic PS (solvent: tetralin, precipitant: butanol). The solubility of the grafted copolymer was lower than that of the linear isotactic PS due to larger macromolecules, but higher than that of atactic PS due to the formation of branched chains. The determination of intrinsic viscosity showed the following results: the initial isotactic PS had a Huggin's constant  $k' = 0.10$ .  $k'$  of the grafted copolymers was 0.40, and  $k'$  of copolymers with different contents of atactic components, in agreement with J. A. Manson, L. H. Gragg (Ref.12: Angew. Chem. 67, 32, 1955), showed no remarkable differences. Fig. 4 gives the thermomechanical properties of the copolymers. The grafted copolymers were found to have a distinct vitrification temperature ( $90^{\circ}\text{C}$ ), and a high melting point ( $220-230^{\circ}\text{C}$ ) characteristic of isotactic PS. This is explained by the fact that the structural order of the isotactic component is preserved in the copolymer. Within these two temperatures, the copolymers showed the ability of reversible, highly elastic deformation which was not accompanied by recrystallization. A radiographic analysis

Card 3/7

89590

Synthesis and properties of grafted...

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showed that grafting of 17% of the atactic component did not change the diffraction of isotactic PS.. 31% of the atactic component, showed wider diffraction lines. The examination of copolymers of crystalline and amorphous components is considered to be an important problem.

I. Yu. Marchenko (Ref.13: Vysokomolek. soyed., 2, 549, 1960) is mentioned. There are 5 figures, 1 table, and 13 references: 9 Soviet-bloc and 4 non-Soviet-bloc. The reference to English language publication reads as follows: Y. Landler, Materials of the Gordon Scientific Conference, USA, 1958.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova  
(Moscow State University imeni M. V. Lomonosov)

SUBMITTED: August 1, 1960

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Synthesis and properties of grafted...

Legend to the table: Ozonization of isotactic polystyrene:  
1) no. of the experiment;  
2) state of aggregation of the polymer; 3) time of ozonization, hr; 4) rate of flow of ozone, l/hr; 5) content of  $O_2$ , %;  
6) powder; 7) ditto; 8) film.

Озомирование изотактического полистирола

Опыт	Агрегатное состояние полимера	Продолжительность озонирования, часы	Скорость пропуска озона, л/час	Содержание $O_2$ , %
(1)	(2)	(3)	(4)	(5)
1	Порошок	0	0	0,5
2	То же	1	10	1,10
3	" "	2	10	2,33
4	" "	3	10	4,1
5	" "	4	10	5,78
6	Пленка	4	0-7	0,0
7	То же	4	20	0,5
8	" "	8	20	до 1

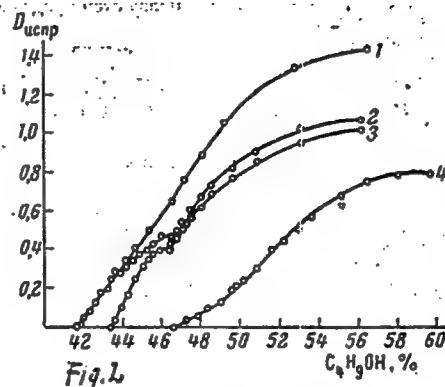
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Legend to Fig.2: Curves of turbidimetric titration. 1) Atactic PS; 2) mechanic mixture of 35% of atactic and 65% of isotactic PS; 3) grafted copolymer (35 : 65); 4) isotactic PS.



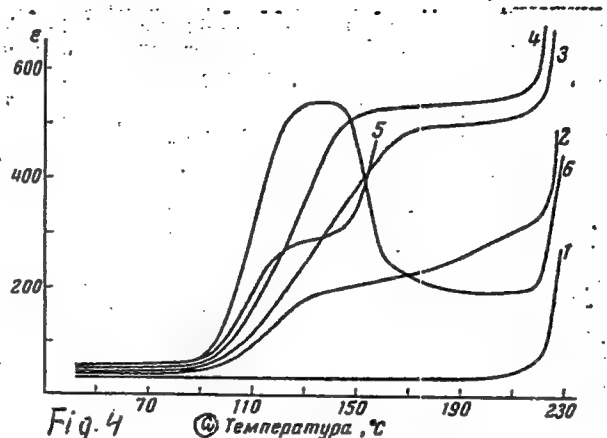
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Synthesis and properties of grafted...

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Legend to Fig.4: Dependence of deformation on temperature.

- 1) Crystalline isotactic PS;
- 2) graft copolymer (35 : 65);
- 3) ditto (31 : 69); 4) ditto (17 : 83);
- 5) atactic PS;
- 6) amorphous isotactic PS;
- a) temperature, °C.



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AUTHORS: Kargin, V. A., Shibayev, V. P., Plate, N. A.  
TITLE: Ordering processes in systems containing grafted copolymers  
on the basis of isotactic and atactic polystyrene  
PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 3, no. 2, 1961,  
299-305

TEXT: It was the purpose of the present work to study the influence of grafting on the ordering processes and crystallization in polymer systems by electron microscopes. Grafted copolymers obtained from isotactic and atactic polystyrene (PS) were used for the investigation. The content of the atactic component was 17% in one sample and 35% in the other. A JEM-5Y electron microscope with direct, 20,000-70,000-fold electron-optical magnification was used for the experiments. The crystallization of polymers dissolved in toluene (concentration of 0.01%) was conducted at 110°C on colloxylin film hardened by quartz or coal. The first electron-microscopical photographs showed no difference between copolymer and crystalline PS. For finding the difference, the film had to be heated

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Ordering processes in systems ...

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up to 140°C. The mixture of crystalline and grafted copolymers then showed a variety of intermediate stages between spherulitic and crystalline formations whose thickness was 150-200 Å. Fibrils (40-50 Å) became visible after heating up to 160°C. With tetralin as solvent, distinct packet structures occurred (250-400 Å). The presence of the copolymer thus inhibits crystallization and causes a variety of intermediate formations. To study the fine structure of the pure copolymer, crystalline PS additions were precipitated from tetralin by methanol, and boiled in heptane for 30 hr. After this reprecipitation the product, originally insoluble in methyl-ethyl ketone, has become soluble up to 40%. Hence, it was concluded that grafting only takes place on the surface of the crystal packages of insoluble, isotactic PS under heterogeneous conditions. The solubility of the product depends on whether the isotactic main chain remains in direct neighborhood of the macromolecules of crystalline PS which did not enter into reaction. Fig. 2 shows the radiographs taken during separation by recrystallization. The electron-microscopical examination of the pure, grafted copolymer showed coiled globules of 40-50 Å. The authors thank N. F. Bakeyev for collaboration and discussion. There are 3 figures and 16 references: 9 Soviet-bloc and 7 non-Soviet-bloc.

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Ordering processes in systems...

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The 3 references to English language publications read as follows:  
H. C. Haas, S. J. Cohen, A. C. Oglesby, E. R. Carlin, J. Polymer Sci.,  
15, 427, 1955; P. H. Till, J. Polymer Sci., 24, 301, 1957; W. D.  
Niegisch, J. Polymer Sci., 40, 263, 1959.

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Ordering processes in systems...

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B101/B215

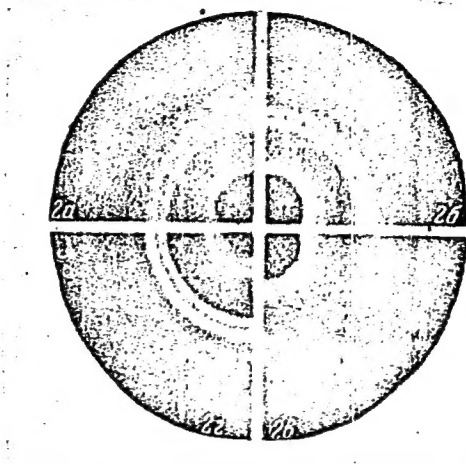
Legend to Fig. 2: Radiographs.

2a) mixture of isotactic PS  
and grafted copolymer immediate-  
ly after reprecipitation;

2c) ditto after crystallization;

2b) fraction soluble in methylethyl  
ketone; 2d) fraction insoluble in  
methyl-ethyl ketone.

[Abstracter's note: the other  
photographs are not reproducible].



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B101/B207

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2209, 1573, 11407

AUTHORS:

Kargin, V. A., Plate, N. A., Zhuravleva, V. G.,  
~~Shibayev, V. P.~~

TITLE:

Structure and properties of the product of codispersion  
of polyethylene and carbon black

PERIODICAL:

Vysokomolekulyarnyye soyedineniya, v. 3, no. 4, 1961,  
650-654

TEXT: The authors aimed at preparing a graft copolymer from polyethylene (PE) and carbon black, and at investigating its physical properties. They proceeded from the assumption that in the mechanical dispersion of carbon black on newly formed surfaces active centers develop which react with the macroradicals formed by dispersion of PE. The experiments were carried out with ISAF carbon black, with a specific surface of 100 m<sup>2</sup>/g, and PE of high density, whose intrinsic viscosity in decaline was equal to 1,1 at 100°C. Dispersion was performed for 1.5 hr by means of a vibratory mill at room temperature. The method has already been described in Ref. 2 (N. A. Plate et al., Vysokomolek. soyed., 1, 1713, 1959). The ratio PE: carbon black was

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Structure and

equal to 1 : 1, 2 : 1, 5 : 1, and 7 : 1. The mixture formed was treated with hot benzene. A fine carbon black suspension formed in the PE solution from which, when cooled, PE adsorbed the entire carbon black into the precipitate. When introducing a paper filter into the 1% hot solution of carbon black containing PE in p-xylene, a 4 cm broad continuous transition from black to colorless was observed, while a mechanical mixture from separately dispersed carbon black and PE showed a clear borderline of carbon black separation on the filtering paper; thus, from the formation of a chemical compound consisting of PE and carbon black at codispersion is assumed. Study by means of a JEM-5Y electron microscope, 30,000-60,000 fold magnification, of samples obtained by evaporation of the 0.01% solution of the polymer in p-xylene showed that, beside aggregates of non-reacted carbon black and the spherulites of PE, also packed structures had been formed. A mechanical mixture from separately dispersed PE and carbon black showed only carbon black aggregates and PE spherulites. It is concluded that PE crystallization is inhibited by the presence of the graft polymer from PE and carbon black. The packed structures form in such a way that the carbon black particles chemically linked with PE, are located in the interpacked space and cause plastification of PE. X-ray analysis showed no difference between

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Structure and ...

copolymer and PE. Fig. 4 gives the result of the mechanical test by means of Polyani dynamometer. The graft copolymer showed a higher elasticity than the mechanical mixture. Moreover, the resistivity of the toluene solution of the graft copolymer was at 70°C twice as high as that of the mechanical mixture. Thus, the contact between the channel black particles was reduced due to their chemical bonding to PE. Since in dispersion of PE, its molecular weight was not reduced, it is assumed the newly formed carbon black surfaces react with the macromolecules of PE. The results are compiled as follows: 1) Slight quantities of graft copolymer form in the joint vibratory grinding of PE and carbon black. 2) This homogenized system does not dissolve into its components when left standing. 3) Thus, it is possible to introduce large quantities of carbon black into PE. 4) Highly elastic products are, however, likely to be obtained only by subsequent vulcanization. T. A. Koretskaya is mentioned. There are 4 figures and 6 references: 4 Soviet-bloc and 2 non-Soviet-bloc. The 2 references to English-language publications read as follows: E. Dannerberg et al., J. Polymer Sci., 31, 127, 1958.

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